Paraguay
Landscape Analysis

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WORD COUNT:
Paraguay Landscape Analysis: Introduction

• Add some text to introduce your country
• Fact 1 Country Region Identified
• Fact 2 What level of economic development
• Fact 3 Potential landscape transformers
• Fact 4 About of biodiversity and habitat types
• Fact 5 How much conservation is done
Paraguay: Methods

Landscape Ecology

- Data was Downloaded from [http://www.diva-gis.org/gdata](http://www.diva-gis.org/gdata)
- Diva-GIS used to export Landcover (Mask) to IDRISI 32 RST format.
- IDRISI 32 used to import *.SHP files (Roads, railways and water lines)

**Data preparation:**
1) **PALETTE and LEGENDS prepared for the Landcover Mask and background value for Landuse Mask maps changed from -32768 to 0 (RECLASS).**
2) **Landuse Mask checked/converted to byte (0-255) format (CONVERT)**
3) **Vectors files were rasterised (LINERAS) using a blank Raster Grid (INITIAL)**
4) **RECLASS was used to allocated a new Landuse category number so they could be added to existing Landuse maps (Note files with more than 256 ID values need to be INTERGER formats including INITIAL grids).**
- RECLASS used to prepare Boolean maps for each landuse.
- AREA used to calculate in km-2 representation of each landuse.
- SIX most important Landuses analysed for fragmentation
- PATTERN used to calculate Landscape Ecology Indices (LEI): Relative Richness, Diversity, Dominance and Fragmentation.
- EXTRACT used to calculate each of the four (LEI) for the six identified Landuses
- Map Properties used to add North Sign, Scale Bar and Image Heading
- Keyboard PrtSc used to copy desktop Image to Windows Paint. Marquee select used to cut and paste this map into other Office applications.
Landscape Ecology Indices

1. Relative Richness \[ R = \frac{n}{n_{\max}} \times 100 \]
   where \( n \) = number of different classes present in the kernel
   \( n_{\max} \) = maximum number of classes in entire image

2. Diversity \[ H = -\sum (p \cdot \ln(p)) \]
   where \( \sum \) = the sum over all classes in the entire image
   \( p \) = proportion of each class in the kernel
   \( \ln \) = natural logarithm

3. Dominance \[ D = H_{\max} - H \]
   where \( H \) = Diversity
   \( H_{\max} \) = maximum diversity = \( \ln(n) \)
   where \( n \) = number of different classes present in the kernel
   \( \ln \) = natural logarithm

4. Fragmentation \[ F = \frac{n-1}{c-1} \]
   where \( n \) = number of different classes present in the kernel
   \( c \) = number of cells considered (9, 25 or 49)

Kernel sizes
- 3 x 3 cells
- 5 x 5 cells
- 7 x 7 cells

Select one kernel for all analyses
Please specify Kernel size
Paraguay Landuse

1-2 sentences of interpretation

http://www.diva-gis.org/gdata
## Paraguay Land Cover

<table>
<thead>
<tr>
<th>Land Cover</th>
<th>km-2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tree Cover, broadleaved, evergreen</td>
<td>88113.81</td>
</tr>
<tr>
<td>Tree Cover, broadleaved, deciduous, closed</td>
<td>121996.95</td>
</tr>
<tr>
<td>Tree Cover, regularly flooded, saline water</td>
<td>9.62</td>
</tr>
<tr>
<td>Shrub Cover, closed-open, evergreen</td>
<td>191.07</td>
</tr>
<tr>
<td>Shrub Cover, closed-open, deciduous</td>
<td>25938.75</td>
</tr>
<tr>
<td>Herbaceous Cover, closed-open</td>
<td>37007.53</td>
</tr>
<tr>
<td>Sparse Herbaceous or sparse Shrub Cover</td>
<td>5769.43</td>
</tr>
<tr>
<td>Regularly flooded Shrub and/or Herbaceous Cover</td>
<td>33241.47</td>
</tr>
<tr>
<td>Cultivated and managed areas</td>
<td>21088.06</td>
</tr>
<tr>
<td>Mosaic: Cropland / Tree Cover / Other natural vegetation</td>
<td>32156.59</td>
</tr>
<tr>
<td>Mosaic: Cropland / Shrub or Grass Cover</td>
<td>28160.57</td>
</tr>
<tr>
<td>Bare Areas</td>
<td>115.72</td>
</tr>
<tr>
<td>Water Bodies (natural &amp; artificial)</td>
<td>6021.30</td>
</tr>
<tr>
<td>Artificial surfaces and associated areas</td>
<td>13.80</td>
</tr>
</tbody>
</table>
Paraguay: Six most important Landuses to be analysed

- Tree Cover, broadleaved, evergreen
- Tree Cover, broadleaved, deciduous, closed
- Herbaceous Cover, closed-open
- Regularly flooded Shrub and/or Herbaceous Cover
- Mosaic: Cropland / Tree Cover / Other natural vegetation
- Mosaic: Cropland / Shrub or Grass Cover

http://www.diva-gis.org/gdata
Paraguay: Tree Cover, broadleaved, evergreen

Relative Richness

- Minimum: 0.000000
- Average: 0.802529
- Maximum: 2.116094
- Population Std. Dev.: 0.396012

Diversity

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Population Std. Dev.: 0.000000

Dominance

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Population Std. Dev.: 0.000000

Fragmentation

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Population Std. Dev.: 0.000000

5 x 5 Kernel used

http://www.diva-gis.org/gdata
Paraguay: Tree Cover, broadleaved, deciduous, closed

Relative Richness

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Diversity

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Dominance

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Fragmentation

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

5 x 5 Kernel used
Paraguay: Herbaceous Cover, closed-open

Relative Richness

- Minimum: 0.000000
- Maximum: 2.116094
- Average: 0.802529
- Pop. Std. Dev.: 0.396012

Diversity

- Minimum: 0.000000
- Maximum: 0.000000
- Average: 0.000000
- Pop. Std. Dev.: 0.000000

Dominance

- Minimum: 0.000000
- Maximum: 0.000000
- Average: 0.000000
- Pop. Std. Dev.: 0.000000

Fragmentation

- Minimum: 0.000000
- Maximum: 0.000000
- Average: 0.000000
- Pop. Std. Dev.: 0.000000

Use Arrow and an annotation

5 x 5 Kernel used

http://www.diva-gis.org/gdata
Paraguay: Regularly flooded Shrub and/or Herbaceous Cover

Relative Richness

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Diversity

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Dominance

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Fragmentation

- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

5 x 5 Kernel used

http://www.diva-gis.org/gdata
Paraguay: Mosaic: Cropland / Tree Cover / Other natural vegetation

Relative Richness
- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Diversity
- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Dominance
- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

Fragmentation
- Minimum: 0.000000
- Average: 0.000000
- Maximum: 0.000000
- Pop. Std. Dev.: 0.000000

5 x 5 Kernel used

Use Arrow and an annotation

http://www.diva-gis.org/gdata
Paraguay: Mosaic: Cropland / Shrub or Grass Cover

Relative Richness
Minimum 0.000000  
Average 0.000000  
Maximum 0.000000  
Pop. Std. Dev. 0.000000

Diversity
Minimum 0.000000  
Average 0.000000  
Maximum 0.000000  
Pop. Std. Dev. 0.000000

Dominance
Minimum 0.000000  
Average 0.000000  
Maximum 0.000000  
Pop. Std. Dev. 0.000000

Fragmentation
Minimum 0.000000  
Average 0.000000  
Maximum 0.000000  
Pop. Std. Dev. 0.000000

5 x 5 Kernel used

Use Arrow and an annotation

http://www.diva-gis.org/gdata
Paraguay Landscape Transformation

1-2 sentences of interpretation

Paraguay: Landscape Transformation

Use Arrow and an annotation

http://www.diva-gis.org/gdata
Paraguay: Landscape Infrastructure

1-2 sentences of interpretation

http://www.diva-gis.org/gdata
Paraguay: Summarisation
Landscape Analysis

Add summarisations of your country

• Summary Statement 1
• Summary Statement 2
• Summary Statement 3
• Summary Statement 4

Ensure statements are clear and well articulated

Be concise and show interpretation of your results in relation to the geography of the country

Wrap up on the significance of your results

Provide evidence of logic and what is happening in reality

Use more than one slide
Paraguay: References for Landscape Analysis

1] Ref
2] Ref
3] Ref....

Need not be peer-reviewed